NEW SPECIES AND VARIETIES OF MOLLUSCA FROM LAKE WINNEBAGO, WISCONSIN, WITH NEW RECORDS FROM THIS STATE

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(Concluded from p. 133)

The lake forms of *gibbosus* are all referable to Grier's *sterkii*, which is the lake manifestation of this species, though they are smaller than the Lake Erie specimens listed. The Winnebago shells are like Ortmann's figures (1920, pl. 8, fig. 3). Measurements of the Winnebago form are given below:

Length 61, height 33, width 19 mm., per cent 31.
Length 63, height 32, width 20 mm., per cent 31.
Length 64, height 34, width 20 mm., per cent 31.

Fusconaia rubiginosa parvula Grier. Winnebago Lake, gravel and boulder bottom, one to ten feet in depth. The Lake Winnebago shells seem referable to the Lake Erie form distinguished by Grier. Measurements of the Wisconsin shells are given below:

Length 56, height 44, width 32 mm.
Length 55, height 40, width 25 mm.
Length 34, height 33, width 24 mm.
Length 38, height 32, width 19 mm.

Parvula is an offshoot of *rubiginosa* rather than of *trigona*, if the Lake Winnebago specimens are referable to the Lake Erie variety. *Rubiginosa* is common in the Fox River and it is from this stock that the lake shells have sprung. The *parvula* here considered are wider than the river form, more trigonal and strikingly swollen anteriorly. A single specimen from Lake Winnebago (number 3 in the measurements above) is markedly trigonal and approaches *trigona* in general shape. The epidermis is yellowish-brown, becoming darker in old specimens.

Amnicola judayi n. sp.

Shell ovate conic, rather wide, widely umbilicated, with rather more than 5 very convex whorls separated by deeply impressed sutures; whitish or corneous, sometimes light brown, shining, lightly striate longitudinally; apex acute; aperture

roundly ovate, a trifle oblique; peristome continuous, somewhat flattened where it is in contact with the preceding whorl.

Length 5.0, width 3.3; length of aperture 2.0, width 1.5 mm. Holotype.

Length 4.4, width 3.1; length of aperture 2.0, width 1.6 mm. Paratype.

Off Doemel Point, Lake Winnebago, on a sandy mud bottom, in nine feet of water.

Associated with *Amnicola limosa porata* is a large form of Amnicola which cannot be referred to any described species. It resembles *cincinnatiensis* in general form, but is smaller with more rounded whorls and a wider umbilicus. It is larger than *winkleyi* Pilsbry (NAUT., Vol. 26, p. 1), with wider whorls and more upen umbilicus. It resembles Tryon's figure of *schrökingeri* Ffld. (Con. Hald. Mon., pl. 17, fig. 1), but is very much larger than that species. It belongs to the group with projecting first whorl and not to the limosa group which is flat on the apex. *Judayi* is one of the most graceful of the Amnicolas, and I take great pleasure in dedicating it to Dr. Chancey Juday, of the University of Wisconsin.

Lioplax subcarinata (Say). Lakes Winnebago and Butte des Morts, sand and mud bottoms, in water one to 13 feet in depth; Omro, Fox River, mud bottom, water 2–3 feet deep. There appear to be several forms of Lioplax included under the name *subcarinata*. The Winnebago Lake shells have subcarinate whorls, which in a large majority of specimens are rounded without a sign of a ridge or carina. Say especially mentions the apex which he describes as "truncated and re-entering". is a peculiar feature which seems to be characteristic of all the material examined from Wisconsin. This is a physiologic character, the truncation and subsequent replacing of the spire with a rounded plug taking place after the shell has acquired five full whorls. All of the young have perfect spires with regularly coiled, rounded whorls. Young shells 8½ mm. long have five whorls, mature shells 16 mm. long have but 4½ whorls; the adult shells, if unmodified, would have 6–7 whorls. Binney's figure 118 fairly well represents the true *subcarinata*. The Winnebago shells measure as follows:

Length 18, width 11.5; aperture length 8, width 6 mm.

Length 14, width 10.1; aperture length 7, width 5 mm.

Subcarinata lives in shallow water in the river and deep water in the lakes. Probably the deeper water of the lake provides the same cool temperature and oxygen supply as the shallow parts of the flowing river.

Planorbis umbilicatellus Ckll. This little-understood species occurred in several places near Lake Winnebago, always in swales or quiet pools. These specimens are somewhat larger than specimens from Colorado and the west. A few individuals have fine, regularly disposed ribs on the base of the shell, where the growth lines are somewhat raised.

Polygyra multilineata algonquinensis Nason. The shells from the Winnebago region are all smaller than typical *multilineata* and the spire is more elevated. These seem nearer Nason's variety *algonquinensis* than any other form (see NAUTILUS, Vol. 19, p. 141). Three specimens measured as follows:

Greatest diameter 21.5; height 15 mm.

Greatest diameter 22.0; height 15.5 mm.

Greatest diameter 18.5; height 13.0 mm.

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